

II. REMARKS/ARGUMENTS

A. General

The application still contains 35 claims.

Claims 1-35 remain the same.

B. Summary of Rejection under 35 USC §102 and Response

In the Office Action, the Examiner has rejected claims 1-3, 6-8, 10-13, 15-17 and 31-35 under 35 USC §102(e) as being anticipated by U.S. Patent 6,826,195 (hereafter to be referred to as Nikolich)

For the same reasons as those presented in the Applicant's previous response dated January 26, 2006, the Applicant respectfully disagrees with the Examiner's rejection, and submits that claims 1-3, 6-8, 10-13, 15-17 and 31-35, as they currently stand, are in allowable form. Additional arguments to this effect are presented herein below in order to better convince the Examiner.

Claim 1-3, 6-8, 10-13 and 15-17

The Examiner's attention is respectfully directed towards the following limitations of independent claim 1:

Claim 1

A router, comprising:

- a plurality of chassis, each chassis comprising a plurality of processing modules and a programmable interconnection module;

- a data connection between each processing module on each chassis and the interconnection module on the same chassis; and

- a data connection between the interconnection module on each chassis and at least one interconnection module on respective other chassis;

- at least one programmable interconnection module being operative for:

- 1) **establishing switchable connections between individual processing modules on its chassis and between at least one processing module on its chassis and at least one interconnection module on another chassis;**
- 2) **upon addition of an additional chassis to said router, changing said switchable connections such that at least one of said processing modules on its chassis is connected to an interconnection module on said additional chassis.**

The Applicant respectfully submits that the Examiner's contention on page 21 of the Office Action that independent claim 1 fails to distinguish over Nikolich is simply wrong. As has been previously set forth by the Applicant, Nikolich does not disclose, teach or suggest the above-emphasized limitations of independent claim 1.

Firstly, independent claim 1 clearly recites that the router comprises an interconnection module that is operative for "establishing *switchable connections between individual processing modules* on its chassis" [emphasis added]. On page 3 of the Office Action, the Examiner asserts that application modules connected to each other through direct point-to-point links via the backplane, as disclosed by Nikolich, are the same as the above claimed interconnections between processing modules. The Applicant respectfully submits that the direct point-to-point links disclosed by Nikolich are in direct contradiction to the *switchable* connections through the *programmable interconnect module*, as recited in independent claim 1.

More specifically, the application modules within each chassis disclosed by Nikolich are not connected to each other through the ICL (inter chassis links) with switchable connections. Instead, they are connected to each other through the backplane using a full mesh of continuous (unswitched) direct (not through an ICL) channels, as is clearly stated in column 5, lines 7-11.

If the Examiner continues to disagree with the Applicant's position, the Examiner is respectfully requested to explain how the point-to-point links disclosed by Nikolich can be considered switchable links.

Secondly, independent claim 1 clearly recites that the programmable interconnection module is also operative for "establishing switchable connections...between at least one processing module on its chassis and at least one interconnection module on another chassis". As has been previously argued, as opposed to establishing switching connections, the ICLs disclosed by Nikolich *switch packets* (column 5, lines 28-36), using an inter-chassis header. Given that connections do not have headers, it should be apparent that Nikolich discloses switching packets and not connections. In column 5, lines 10-14, Nikolich indicates that *connections* are "continuous direct channels". Nowhere is it disclosed that these continuous direct channels can be switched. Accordingly, Nikolich cannot be said to have ICLs with *switchable* connections.

Finally, the Applicant respectfully submits that the following limitation is also absent from Nikolich:

at least one programmable interconnection module being operative for...upon addition of an additional chassis to said router, changing said switchable connections such that at least one of said processing modules on its chassis is connected to an interconnection module on said additional chassis

The Examiner goes on to allege that when an additional chassis is added, at least one link of the application module 12 becomes the inter-chassis link module connecting at least one application module to an interchassis link module of the second chassis, and that this is equivalent to the claimed changing said switchable connections of independent claim 1. The Applicant firmly disagrees. As stated in column 3, lines 53-56 of Nikolich, the ICL has only one egress port. That one egress port always connects all application modules in the ICL's chassis to at most one other place (i.e. to another chassis, or to nothing if the

egress port is not connected to an ICL of another chassis). When an additional chassis is added, that ICL does not switch any of its connections at all. Instead, the application modules in its chassis are all still connected to its one egress port, and that takes them to the same other chassis. In Nikolich, it is a *different* ICL that connects to the new chassis. Nikolich's ICL does not switch any connection when a chassis is added.

In Nikolich, the closest thing to switching connections when a chassis is added, is that the system operator (not Nikolich's ICL) physically connects the ICL (not switches a connection) to the additional chassis. Accordingly, each inter-chassis link is only able to connect to one other inter-chassis link, and is not able to change or switch its connections without being manually re-connected to a different ICL on another chassis. As such, when a chassis is added, none of the ICLs are operative for switching previously established connections so as to be able to connect to an ICL on the newly added chassis.

In light of the above, the Applicant respectfully submits that Nikolich does not disclose, teach or suggest the above emphasized limitation of independent claim 1.

As per §2131 of the MPEP, in order "to anticipate a claim, the reference must teach every element of the claim". Since Nikolich does not teach either of the above emphasized limitations of independent claim 1, Nikolich does not support a rejection based on anticipation. Accordingly, claim 1 meets the requirements of 35 U.S.C. 102. The Applicant therefore submits that claim 1, as it currently stands, is in allowable form, and respectfully requests that the Examiner withdraw his rejection of independent claim 1.

Claims 2-3, 6-8, 10-13 and 15-17 depend from independent claim 1 and, as such, incorporate by reference all the limitations contained therein, including the above limitations which have already been shown to be absent from Nikolich.

Accordingly, claims 2-3, 6-8, 10-13 and 15-17 are believed to be in condition for allowance as being dependent upon an allowable base claim. The Examiner is respectfully requested to withdraw his rejection to dependent claims 2-3, 6-8, 10-13 and 15-17.

Claims 31-35

The Examiner's attention is respectfully directed towards the following limitations of independent claim 31:

A method of upgrading a router including a plurality of original chassis, each original chassis comprising a plurality of processing modules and a programmable interconnection module, wherein a data connection exists between each processing module on each original chassis and the interconnection module on the same original chassis and wherein a data connection exists between the interconnection module on each original chassis and at least one interconnection module on respective other original chassis, **wherein at least one interconnection module on an original chassis establishes switchable connections between the individual processing modules on its chassis and between at least one processing module on its chassis and at least one interconnection module on another original chassis**, the method comprising:

providing at least one additional chassis, each additional chassis comprising a plurality of processing modules and a programmable interconnection module, wherein a data connection exists between each processing module on each additional chassis and the interconnection module on the same additional chassis;

establishing a data connection between an interconnection module on at least one additional chassis and the at least one interconnection module on one of the at least one original chassis;

re-programming the at least one interconnection module on the at least one original chassis that has the switchable connections, such that at least one processing module on its original chassis is connected to the interconnection module on said at least one additional chassis.

In rejecting claim 31, the Examiner alleges that "the application module 12 of the original chassis can be reprogrammed to switch connections from between processing modules 1-11 to between a processing module and an interconnection module of the original chassis". Firstly, and for the same reasons as those presented above with respect to independent claim 1, the Applicant respectfully submits that Nikolich does not disclose "at least one interconnection module on an original chassis establishes switchable connections between the individual processing modules on its chassis and between at least one

processing module on its chassis and at least one interconnection module on another original chassis". Moreover, in Nikolich the application module 12 always has direct point-to-point connections to processing modules 1-11 that are direct, continuous, and are hardwired into the backplane.

Secondly, Nikolich's ICL never switches any connection, what it switches are packets. More specifically, Nikolich does not disclose a method wherein upon the addition of an additional chassis to the router, the method involves "re-programming [an] interconnection module ...such that at least one processing module on its original chassis is connected to the interconnection module on said at least one additional chassis".

As mentioned above with respect to independent claim 1, Nikolich teaches a system wherein each chassis has one or more Inter-chassis links (ICL) that are only able to connect to one other inter-chassis link, and are operative to switch packets and not the connections between their processing modules and other inter-chassis links. Nowhere does Nikolich disclose that the inter-chassis links can be "re-programmed" such that a processing module on the original chassis can be connected to an interconnection module on at least one additional chassis.

Since Nikolich does not teach all the limitations of independent claim 31, Nikolich does not support a rejection based on anticipation. Accordingly, claim 31 meets the requirements of 35 U.S.C. 102. The Applicant therefore submits that claim 31 is in allowable form, and respectfully requests that the Examiner withdraw his rejection to independent claim 31.

Claims 32-35 depend from independent claim 31 and, as such, incorporate by reference all the limitations contained therein, including the above limitation which has already been shown to be absent from Nikolich. Accordingly, claims 32-35 are now believed to be in condition for allowance as being dependent upon

an allowable base claim. The Examiner is respectfully requested to withdraw his rejection to dependent claims 32-35.

C. Summary of Rejection to claims 4 and 5 under 35 USC §103 and Response

In the Office Action, the Examiner has rejected claims 4 and 5 under 35 USC §103(a) as being unpatentable over Nikolich in view of U.S. Patent 6,870,813 (hereafter to be referred to as Raza)

As per § 2143.03 of the *Manual of Patent Examining Procedure*, in order to establish a *prima facie* case of obviousness, the combined prior art references must teach or suggest all of the claim limitations.

Claims 4 and 5 depend from independent claim 1 and as such incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from Nikolich. The Applicant further submits that this limitation is also absent from Raza.

upon addition of an additional chassis to said router, changing said switchable connections such that at least one of said processing modules on its chassis is connected to an interconnection module on said additional chassis.

Raza relates to service provider networks, and specifically to a transport layer having an optical network. Nowhere does Raza disclose a plurality of chassis in a router, nor interconnection modules for connecting the chassis in the router together. As such, Raza does not teach the above-emphasized limitation of independent claim 1.

Since neither Nikolich nor Raza teach the above limitation of independent claim 1, and since claims 4 and 5 depend from independent claim 1, the Applicant respectfully submits that the references cited by the Examiner do not support a

prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw his rejection to claims 4 and 5 under 35 U.S.C. §103(a).

D. Summary of Rejection to claims 9, 21-23, 26 and 28-30 under 35 USC §103 and Response

In the Office Action, the Examiner has rejected claims 9, 21-23, 26 and 28-30 under 35 USC §103(a) as being unpatentable over Nikolich in view of U.S. Patent 6,898,205 (hereafter to be referred to as Chaskar)

Claim 9

Claim 9 depends from independent claim 1 and as such incorporates by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from Nikolich. The Applicant further submits that this limitation is also absent from Chaskar.

upon addition of an additional chassis to said router, changing said switchable connections such that at least one of said processing modules on its chassis is connected to an interconnection module on said additional chassis.

Chaskar relates to a method and system for selecting an offset between data bursts and control packets in an optical burst switching arrangement. Nowhere does Chaskar disclose a router having a plurality of chassis, nor interconnection modules for connecting the chassis in the router together. As such, Chaskar does not disclose the above limitation of independent claim 1.

Accordingly, since neither Nikolich nor Chaskar teach the above limitation of independent claim 1, and since claim 9 depends from independent claim 1, the Applicant respectfully submits that the references cited by the Examiner do not support a *prima facie* case of obviousness, as per § 2143.03 of the MPEP.

Accordingly, the Examiner is respectfully requested to withdraw his rejection of claim 9 under 35 U.S.C. §103(a).

Claims 21-23, 26 and 28-30

The Examiner's attention is respectfully directed towards the following limitations of independent claim 21, as amended:

A chassis for use in building a scalable router, comprising:

a plurality of processing modules, each processing module including a plurality of electrical input ports, a plurality of electrical output ports and a processing fabric disposed therebetween;

a programmable interconnection module, including a plurality of electrical input ports, a plurality of electrical output ports and a programmable switch fabric disposed therebetween, for creating selectively established connections between individual ones of the electrical input ports and corresponding ones of the electrical output ports in accordance with a connection map, said interconnection module being operative for changing said selectively established connections upon the addition of another chassis to the scalable router;

a data connection between each processing module and the interconnection module, whereby a subset of the plurality of electrical input ports of each processing module on each chassis is connected to a respective subset of the electrical output ports of the interconnection module on that chassis and whereby a subset of the plurality of electrical output ports of each processing module on each chassis is connected to a respective subset of the electrical input ports of the interconnection module on that chassis

a plurality of optical input ports and a plurality of optical output ports, for external connection to one or more other chassis of the router;

a plurality of optical-to-electrical conversion units, each optical-to-electrical conversion unit being connected between a respective one of the optical input ports and a respective subset of the electrical input ports of the interconnection module; and

a plurality of electrical-to-optical conversion units, each electrical-to-optical conversion unit being connected between a respective subset of the electrical output ports of the interconnection module and a respective one of the optical output ports.

The Applicant respectfully submits that neither Nikolich nor Chaskar disclose, teach or suggest the above-emphasized limitation of independent claim 21. More specifically, neither of the references disclose a programmable interconnection module including a programmable switch fabric for **selectively establishing connections** and then **"changing said selectively established connections upon the addition of another chassis to the scalable router"**.

On page 13 of the Office Action, the Examiner alleges that Nikolich discloses a Mesh Communication Chip (MCC) that serves as a programmable switching fabric for creating selectively established connections. The Applicant respectfully submits that the Examiner is not considering the teachings of Nikolich in their entirety. More specifically, the Examiner omits to note that the connections are between the electrical ports, and that the MCC is always connected to all 12 ports of the ICL. As such, *it cannot* be said that the MCC selectively establishes connections between the ports. As discussed earlier, what it does do is to selectively switch packets arriving from the ports to which it is permanently connected.

Furthermore, Nikolich does not teach that the “interconnection module is operative for changing said selectively established connections upon the addition of another chassis to the scalable router”. Instead, Nikolich requires that any changing of established connections is done manually. It cannot be said that the MCC, or the ICL, is operative for changing selectively established connections.

As such, Nikolich does not disclose, or teach the above-emphasized limitation of independent claim 21.

The Applicant further submits that Chaskar does not disclose this limitation either. Instead, Chaskar discloses a technique for selecting the offset between data bursts and their control packets in an optical burst switching arrangement. Chaskar does not disclose a router having a plurality of chassis, nor interconnection modules located on each chassis for interconnecting the plurality of chassis. As such, Chaskar does not disclose the above emphasized limitation of “said interconnection module...changing said selectively established connections upon the addition of another chassis to the scalable router”.

Since neither of the references cited by the Examiner disclose or teach the above emphasized limitation of independent claim 21, the Applicant respectfully submits

that this combination of references is insufficient to establish a prima facie case of obviousness, as per § 2143.03 of the MPEP. Accordingly, claim 21 is believed to be in allowable form, and the Applicant respectfully requests that the Examiner withdraw his rejection to independent claim 21.

Claims 22-23, 26 and 28-30 depend from independent claim 21 and, as such, incorporate by reference all the limitations contained therein. Accordingly, claims 22-23, 26 and 28-30 are now believed to be in condition for allowance as being dependent upon an allowable base claim. The Examiner is respectfully requested to withdraw his rejection to dependent claims 22-23, 26 and 28-30.

E. Summary of Rejection to claim 27 under 35 USC §103 and Response

In the Office Action, the Examiner has rejected claim 27 under 35 USC §103(a) as being unpatentable over Nikolich in view of Chaskar in still further view of U.S. Patent Publication 2002/0150056 (hereafter to be referred to as Abadi).

Claim 27 depends from independent claim 21 and as such incorporates by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from both Nikolich and Chaskar. The Applicant further submits that this limitation is also absent from Abadi.

a programmable interconnection module, including a plurality of electrical input ports, a plurality of electrical output ports and a programmable switch fabric disposed therebetween, for selectively establishing connections between individual ones of the electrical input ports and corresponding ones of the electrical output ports in accordance with a connection map, said interconnection module being operative for changing said selectively established connections upon the addition of another chassis to the scalable router;

Abadi relates to a method for avoiding deadlocks in a mesh-connected network. Nowhere does Abadi disclose a plurality of chassis in a router, nor an interconnection module on each chassis for selectively establishing connections

between electrical input ports and electrical output ports. Nor does Abadi disclose changing those selectively established connections upon the addition of another chassis to the scalable router. As such, Abadi does not teach the above emphasized limitation of independent claim 21.

Accordingly, since none of Nikolich, Chaskar or Abadi teach the above limitation of independent claim 21, and since claim 27 depends from independent claim 21, the Applicant respectfully submits that the combination of references cited by the Examiner does not support a *prima facie* case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw his rejection of claim 27 under 35 U.S.C. §103(a).

F. Summary of Rejection to claims 24 and 25 under 35 USC §103 and Response

In the Office Action, the Examiner has rejected claims 24 and 25 under 35 USC §103(a) as being unpatentable over Nikolich in view of Chaskar in still further view of Raza.

Claims 24 and 25 depends from independent claim 21 and as such incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from both Nikolich and Chaskar. The Applicant further submits that this limitation is also absent from Raza.

a programmable interconnection module, including a plurality of electrical input ports, a plurality of electrical output ports and a programmable switch fabric disposed therebetween, for selectively establishing connections between individual ones of the electrical input ports and corresponding ones of the electrical output ports in accordance with a connection map, said interconnection module being operative for changing said selectively established connections upon the addition of another chassis to the scalable router;

As described above with respect to dependent claims 4 and 5, Raza discloses service provider networks, and specifically a transport layer having an optical network. Nowhere does Raza disclose a plurality of chassis in a router. Nor does Raza disclose an interconnection module on each chassis for selectively establishing connections between electrical input ports and electrical output ports, and then changing those selectively established connections upon the addition of another chassis to the router. As such, Raza does not teach the above emphasized limitation of independent claim 21.

Since neither Nikolich, Chaskar nor Raza teach the above limitation of independent claim 21, and since claims 24 and 25 depend from independent claim 21, the Applicant respectfully submits that the references cited by the Examiner do not support a *prima facie* case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw his rejection of claims 24 and 25 under 35 U.S.C. §103(a).

G. Summary of Rejection to claim 14 under 35 USC §103 and Response

In the Office Action, the Examiner has rejected claim 14 under 35 USC §103(a) as being unpatentable over Nikolich in view of Abadi.

Claim 14 depends from independent claim 1 and as such incorporates by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from Nikolich. The Applicant further submits that this limitation is also absent from Abadi.

upon addition of an additional chassis to said router, changing said switchable connections such that at least one of said processing modules on its chassis is connected to an interconnection module on said additional chassis.

For the same reasons as those presented above with respect to claim 27, the Applicant respectfully re-iterates that Abadi relates to a method of avoiding

deadlocks in a mesh-connected network. Abadi does not disclose a plurality of chassis in a router, nor an interconnection module on each chassis for establishing switchable connections between individual processing modules on its chassis, and between processing modules and other interconnection modules on other chassis. As such, Abadi does not disclose the above emphasized limitation of changing those switchable connections upon the addition of another chassis to the router.

Accordingly, since neither Nikolich nor Abadi teach the above limitation of independent claim 1, and since claim 14 depends from independent claim 1, the Applicant respectfully submits that the references cited by the Examiner do not support a *prima facie* case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw his rejection to claim 14 under 35 U.S.C. §103(a).

H. Summary of Rejection to claims 18-20 under 35 USC §103 and Response

In the Office Action, the Examiner has rejected claims 18-20 under 35 USC §103(a) as being unpatentable over Nikolich in view of U.S. Patent 6,058,116 (hereafter to be referred to as Hiscock).

Claims 18-20 depend from independent claim 1 and as such incorporate by reference all the limitations contained therein, including the following limitation which has already been shown to be absent from Nikolich. The Applicant further submits that this limitation is also absent from Hiscock.

upon addition of an additional chassis to said router, changing said switchable connections such that at least one of said processing modules on its chassis is connected to an interconnection module on said additional chassis.

Hiscock relates to an arrangement of trunk clusters wherein the interconnection method has no single point of failure. Nowhere does Hiscock disclose a router

comprising a plurality of chassis, wherein each chassis includes an interconnection module for establishing switchable connections. Nor does Hiscock disclose that these interconnection modules are operative to change the switchable connections upon the addition of an additional chassis.

Accordingly, since neither Nikolich nor Hiscock teach the above limitation of independent claim 1, and since claims 18-20 depend from independent claim 1, the Applicant respectfully submits that the references cited by the Examiner do not support a *prima facie* case of obviousness, as per § 2143.03 of the MPEP. Accordingly, the Examiner is respectfully requested to withdraw his rejection of claims 18-20 under 35 U.S.C. §103(a).

III. CONCLUSION

In view of the above, it is respectfully submitted that claims 1-35 are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance of claims 1-35 at an early date is solicited.

If the claims of the application are not considered to be in full condition for allowance, for any reason, the Applicant respectfully requests the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims or in making constructive suggestions so that the application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,



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